**Identify 3 capabilities of blockchain that have business value**

Blockchain is an open, distributed ledger than can record transactions between two parties efficiently and in a verifiable and permanent way. Also, the ledger itself can also be programmed to trigger transactions automatically. Blockchain has the advantage that it sits on top of the internet

1) Some companies can use blockchain to track items through complex supply chains. So, it has the features that: Bilateral financial transactions (Reduce the cost of transactions), System of record for all transactions

2) Some substitute blockchain applications, by using some virtual currency.

3) Smart contracts

**How would they be accomplished in a non-p2p environment?**

1) Nowadays, keeping ongoing records of transactions is a code function of any business. Those records track past actions and performance and guide planning for the future. They provide a view not only of how the organization works internally but also of the organization’s outside relationships. Every organization keeps its own records, and they’re private. Many organizations have no master ledger of all their activities; instead records are distributed across internal units and functions. The problem is, reconciling transactions across individual and private ledgers takes a lot of time and is prone to error

For example, a typical stock transaction can be executed within microseconds, often without human intervention. However, the settlement—the ownership transfer of the stock—can take as long as a week. That’s because the parties have no access to each other’s ledgers and can’t automatically verify that the assets are in fact owned and can be transferred. Instead a series of intermediaries act as guarantors of assets as the record of the transaction traverse's organizations and the ledgers are individually updated.

Also, Bank of America, JPMorgan, the New York Stock Exchange, Fidelity Investments, and Standard Chartered are testing blockchain technology as a replacement for paper-based and manual transaction

2) Without p2p environment, some third parties like governments and institutions have long handled and overseen the transactions which go against our will to build a more transparent world.

3) It will automatically finish some things with the programming, like sending a payment to a supplier as soon as a shipment is delivered. Without it, people have to fix the complex things by themselves ant the most important part is it may cause some problems because some manual mistakes or fraud.

**Why or why not would one want to use a blockchain to do that?**

1) Blockchain could dramatically reduce the cost of transactions. It has the potential to become the system of record for all transactions.

In a blockchain system, the ledger is replicated in a large number of identical databases, each hosted and maintained by an interested party. When changes are entered in one copy, all the other copies are simultaneously updated. So as transactions occur, records of the value and assets exchanged are permanently entered in all ledgers. There is no need for third-party intermediaries to verify or transfer ownership. If a stock transaction took place on a blockchain-based system, it would be settled within seconds, securely and verifiably. (The infamous hacks that have hit bitcoin exchanges exposed weaknesses not in the blockchain itself but in separate systems linked to parties using the blockchain.)

2) The future is still no certain, because the ecosystem coordination challenges are high. It will need to influence government policy and persuade central banks and large organizations to use it. That could take years of concerted effort.

3)The implications are fascinating. Firms are built on contracts, from incorporation to buyer-supplier relationships to employee relations. But A tremendous degree of coordination and clarity on how smart contracts are designed, verified, implemented, and enforced will be required. We believe the institutions responsible for those daunting tasks will take a long time to evolve. And the technology challenges—especially security—are daunting.